CLAIMS

1. A medical device, comprising:

a syringe, comprising:

a barrel;

a plunger slidably displaceable within the barrel;

a needle assembly, comprising:

a housing adapted to receive the syringe;

a needle operable between an extended position in which the needle projects forwardly from the housing and a retracted position in which the sharpened tip of the needle is enclosed within the housing;

a biasing element biasing the needle toward the retracted position;

a needle retainer releasably retaining the needle in the extended position against the bias of the biasing element;

wherein upon forward displacement of the syringe relative to the needle retainer, the needle is released for retraction so that the biasing element retracts the needle into the housing.

2. The medical device of claim 1 wherein the biasing element displaces the syringe rearwardly upon actuation of retraction of the needle.

3. The medical device of claim 1 comprising a connector for connecting the syringe to the needle assembly.

4. The medical device of claim 1 wherein the needle assembly comprises a hub that is axially displaceable relative to the needle retainer to effectuate retraction of the needle.

5. The medical device of claim 4 wherein the needle retainer comprises a radially deformable arm engaging the housing, wherein the hub displaces the arm radially inwardly to effectuate retraction of the needle.

6. A medical device, comprising:

a barrel;

a needle assembly connected with the barrel having a needle operable between an extended position in which the needle is exposed for use and a retracted position in which the needle is shielded to prevent inadvertent contact with the sharpened tip of the needle;

a biasing element biasing the needle toward the retracted position; and

a needle retainer releasably retaining the needle in the extended position against the bias of the

biasing element;

wherein after use of the device, the needle retainer releases the needle and the needle is displaced into the retracted position under the biasing force of the biasing element.

7. A safety medical device, comprising:

a medical apparatus comprising:

a housing; and

a first connector attached to the housing;

a shielded needle assembly, comprising:

a needle having a sharpened tip;

a shield surrounding at least a portion of the housing, operable between a retracted position in which the sharpened tip of the needle projects forwardly from the shield and an extended position in which the sharpened tip of the needle is enclosed within the shield;

a second connector cooperable with the first connector to attach the needle to the housing;

a biasing element biasing the shield forwardly relative to the housing toward the extended position;

a retainer releasably retaining the shield in

the retracted position against the bias of the biasing element; and

means for releasing the shield from the retainer in response to advancing the housing forwardly relative to the shield, wherein upon releasing the shield, the biasing element displaces the shield into the extended position.

8. The safety medical device of claim 7, wherein the needle is fixedly attached to the second connector.

9. The safety medical device of claim 7 comprising an actuator connected with the second connector, and configured to engage the needle retainer upon axial advancement of the housing relative to the shield.

10. The safety medical device of claim 7, wherein the retainer comprises a radially deformable arm.

11. The safety medical device of claim 10 comprising an actuator connected with the second connector, and configured to radially deform the retainer arm upon axial advancement of the housing relative to the shield.

12. The safety medical device of claim 7 wherein the medical apparatus comprises a plunger slidable within the housing, and the housing comprises a forward end wall such that advancing the plunger forwardly displaces the plunger into engagement with the end wall, and continued advancement of the plunger displaces the housing forwardly relative to the shield to release the shield from the retainer.

13. The safety medical device of claim 7, comprising a lock for automatically substantially permanently locking the shield after the shield is displaced into the extended position to prevent displacement of the shield relative to the needle after the shield is extended.

14. The safety medical device of claim 13 wherein the lock comprises a radially deformable locking arm and the shield comprises a recess that cooperates with the locking arm.

15. The safety medical device of claim 7 wherein the shield comprises a pair of flanges projecting radially outwardly and configured to provide a surface for a user to engage during use of the device.

16. The safety medical device of claim 7 wherein the second connector is cooperable with the first connector to substantially permanently attach the needle to the housing.

17. A method for assembling and using a safety medical device, comprising the steps of:

providing a sterile needle assembly, comprising a needle having a sharpened tip, a shield and a first connector;

providing a sterile medical apparatus, comprising a housing and a second connector;

sealing the sterile needle assembly and the sterile medical apparatus within one or more containers to prevent contamination of the needle assembly and medical apparatus from becoming contaminated;

removing the needle assembly and medical apparatus from the one or more containers;

connecting the first connector to the second connector to attach the needle assembly to the medical apparatus;

performing a medical procedure with the combined medical apparatus and needle assembly;

retaining the shield against advancing over the sharpened tip of the needle during the step of

performing a medical procedure;

automatically releasing the shield and displacing the shield to enclose the sharpened tip of the needle in response to axial displacement of the housing relative to the shield.

18. A method for assembling and using a safety medical device, comprising the steps of:

providing a sterile needle assembly, comprising a needle having a sharpened tip, a shield and a first connector;

providing a sterile medical apparatus, comprising a barrel for receiving medicine, a plunger slidable within the barrel, and a second connector;

sealing the sterile needle assembly and the sterile medical apparatus within one or more containers to prevent the needle assembly and medical apparatus from becoming contaminated;

removing the needle assembly and medical apparatus from the one or more containers;

connecting the first connector to the second connector to attach the needle assembly to the medical apparatus;

injecting medicine from the barrel and through the attached needle assembly by displacing the

plunger forwardly within the barrel;

retaining the shield against advancing over the sharpened tip of the needle during the step of injecting medicine;

automatically releasing the shield and displacing the shield to enclose the sharpened tip of the needle in response to axial displacement of the plunger.

19. The method of claim 18 wherein the first connector and second connector are cooperating Luer connectors.

20. The method of claim 18 wherein the needle assembly comprises a biasing element, and the step of automatically releasing the shield and displacing the shield comprises automatically advancing the shield with the spring after the shield is released.

21. The method of claim 18 comprising the step of automatically locking the shield to prevent axial displacement of the shield relative to the needle after the shield encloses the sharpened tip of the needle.